REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1, 4-8, 10, 11, 15 and 16 are pending in the present application. Claim 1 has been amended and claim 12 has been canceled by the present Amendment.

In the Outstanding Office Action, the drawings and specification were objected to; claims 1, 4-8, 10-12, 15 and 16 were rejected under 35 U.S.C. § 112, second paragraph; claims 1, 4-8, 10-12, 15 and 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Tepman et al. or Dubois et al.; and claims 4 and 10 were rejected under 35 U.S.C. § 103(a) as unpatentable over AAPA in view of Tepman et al. or Dubois et al. and Rempei Nakata.

Regarding the objection to the drawings, it is respectfully noted Figures 2, 3, 5, 6, 12A and 12B have been amended to address the concerns noted in the Office Action. For example, Figure 5 has been amended to clearly show the sliding portion 42 disposed at one edge of the susceptor 30. Figures 11A-11C also clearly show the sliding portion 42. Figure 6 has also been amended to show a length of the sliding portion 42, measured from the groove 44, is about 10 mm. Figure 5 already shows this dimension of 10mm for the sliding portion 42. Note, this dimension is particular advantageous because this dimension makes a transfer of the substrate 34 more stable than the background art dimension of only 5mm (see paragraph [0041] in the originally-filed specification). In addition, because the dimension of the sliding portion is 10mm, the substrate 34 stably slides along the sliding portion 42. This sliding action, although beneficial because there is a more stable transfer, results in a problem that excess material from

the depositing process accumulates and is scraped off, causing problems in a next deposition process and in removing the current substrate 34 from the processing chamber (the Description of the Related Art of the present application goes into great detail about theses types of problems). Formal drawings will be submitted in due course.

The present invention solves the problems of the related art by increasing the sliding portion of the susceptor to about 10mm and also by including a groove 44 in the susceptor 30 to catch scraped off material (Figure 11A-11C illustrate the material 45 being scraped off by the sliding substrate 34 and scraped into the groove 44). In addition, the stopping pins 40 are placed within the groove 44 (Figures 12A and 12B have been amended to clearly illustrate this feature). Note that original Figure 5 illustrates the stopping pins 40 being within the groove 40, and thus the amendments made to Figures 12A and 12B are not new matter.

Therefore, it is respectfully submitted the drawings show the sliding portion 42, the stopping pins 40, the groove 44 and the claimed dimension of 10mm.

In addition, regarding the objection to Figures 12A and 12B only showing less than half of the susceptor, it is respectfully noted Figures 12A and 12B are partial views of the susceptor and are not intended to show the entire susceptor (Figure 5 illustrates the entire susceptor from a top view perspective). In addition, it is respectfully noted that the stepped-portion of the susceptor 30 (Figures 6-10 clearly illustrate the stepped-portion) occurs at only one edge of the susceptor and is not around an entire circumference of the susceptor.

Also, Figures 11A-11C, 12A and 12B are diagrams used to illustrate the loading and unloading of the substrate 34. A detailed explanation of the loading and unloading process will now be given with respect to Figures 11A-11C, 12A and 12B.

As shown in Figure 11A, the substrate 34 is resting on the robot arm 35 such that an edge portion of the substrate 34 hangs over the edge of the robot arm 35. The robot arm 35 is then moved in a forward direction towards the sliding portion 42 of the susceptor 30. Note that the non-supported edge of the substrate 34 has an incline of about 85 degrees, which is caused by the weight of the substrate 34 and because the substrate 34 has been heated. Thus, the substrate 34 tends to "sag" off the edge of the robot arm 35, as shown in Figure 11A. It is respectfully noted that the robot arm 35 does not "sag" or incline with respect to the susceptor 30, but rather the robot arm 35 has sufficient stability such that it is substantially parallel with the susceptor 30 as the robot arm 35 delivers the substrate 34 to the susceptor 30. In addition, claim 15 recites that that the incline of the non-supported edge of the glass substrate is substantially 85 degrees from a vertical when sliding the glass substrate on the sliding portion of the susceptor (and not that the robot arm 35 is substantially 85 degrees from the vertical).

As shown in Figure 11B, the robot arm 35 is continued in a forward direction such that the non-supported edge of the substrate 34 slides along the sliding portion 42. As the substrate 34 is sliding along the sliding portion 42, the sliding substrate 34 scrapes off excess deposited material 45. The robot arm 35 continues in a forward direction such that the material 45 is scraped off and advantageously deposited into the groove 44 as shown in Figure 11C. The substrate 34 then continues sliding forward until being stopped by the stopping pins 40.

Then, the lift pins 36 are lifted to support the substrate 34 as shown in FIG. 12B. The robot arm 35 can then be lowered and withdrawn from the process chamber allowing the substrate 34 to receive an appropriate deposition process. After the appropriate deposition process, the robot arm 35 is brought back into the process chamber, and removes the substrate 34

in the reverse process.

Thus, as shown in Figures 11A-11C, 12A and 12B, the robot arm 35 supports a portion of the glass substrate 34 with a non-supported edge portion freely hanging over the robot arm 35 such that as the robot arm 35 moves in a forward direction to transfer the glass substrate 34 onto the susceptor 30, the non-supported edge portion of the glass substrate 34 slides on the sliding portion 42 of the susceptor 30 and is stopped by at least one stopping pin 40 located at the stopping position. These figures also illustrate the groove 44 formed in the sliding portion 42 of the susceptor 30 at a location of the at least one stopping pin 40 for receiving material 45 resulting from sliding of the glass substrate 34 on the sliding portion 42 of the susceptor 30. Figures 5 and 6 also illustrate a length of the sliding portion 42, measured from the groove 44, is about 10 mm.

Accordingly, in light of the above comments, it is respectfully requested the objections to the drawings be withdrawn. Once the Examiner approves the proposed drawing changes, Applicant will submit replacement sheets of corrected drawings.

In addition, regarding the objection to the specification, enclosed is a clean copy of a substitute specification including all previous changes and a few minor changes with respect to the description of Figure 2. A marked-up copy is also included showing all changes made compared to the originally filed application (12/28/2001).

Regarding the rejection of claims 1, 4-8, 10-12, 15 and 16 under 35 U.S.C. § 112, second paragraph, it is respectfully noted Figure 2 has been amended to remove the label 28 (i.e., a stopping pin) because it is clear the pointed to element is a lift pin 6 and not a stopping pin 28. Figure 3 properly illustrates the location of the stopping pins 28 used to stop the substrate 4.

Also, as discussed above, Figures 11A-11C, 12A and 12B illustrate the robot arm 35 supports a portion of the glass substrate 34 with a non-supported edge portion freely hanging over the robot arm 35 such that as the robot arm 35 moves in a forward direction to transfer the glass substrate 34 onto the susceptor 30, the non-supported edge portion of the glass substrate 34 slides on the sliding portion 42 of the susceptor 30 and is stopped by at least one stopping pin 40 located at the stopping position. These figures also illustrate the groove 44 formed in the sliding portion 42 of the susceptor 30 at a location of the at least one stopping pin 40 for receiving material 45 resulting from sliding of the glass substrate 34 on the sliding portion 42 of the susceptor 30. Figures 5 and 6 also illustrate a length of the sliding portion 42, measured from said groove 44, is about 10 mm.

Also, with regard to claim 12 (which has now been included in claim 1), the second planar portion being horizontally contiguous with the first planar portion such that the first and second planar portions of the susceptor form a stepped-shape is shown in Figures 6-10. The second planar portion is the top portion of the susceptor 30 including the sliding portion 42 and the groove 44. The lower portion of the susceptor 30 corresponds to the first planar portion (and as shown the second planar portion is vertically above the first planar portion and horizontally contiguous with the first planar portion such that the first and second planar portions of the susceptor form a stepped-shape). Also, regarding the rejection of claim 15, as discussed above, claim 15 does not recite that the robot arm 35 is configured to incline the glass substrate 34 at 85 degrees. Rather, claim 15 recites that the incline of the non-supported edge of the glass substrate is substantially 85 degrees from a vertical when sliding the glass substrate on the sliding portion of the susceptor, which is shown in Figures 11A-11C.

Accordingly, in light of the above comments, it is respectfully requested this rejection be withdrawn.

Claims 1, 4-8, 10-12, 15 and 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over AAPA in view of Tepman et al. or Dubois et al. This rejection is respectfully traversed.

Claim 1 includes a combination of elements and has been amended to clarify that the susceptor includes a first planar portion, a second planar portion vertically above the first planar portion and horizontally contiguous with the first planar portion such that the first and second planar portions of the susceptor form a stepped-shape, the groove is formed only in the second planar portion in only one edge of the susceptor, and the glass substrate slides on the second planar portion such that the groove receives scrapped off material resulting from the sliding of the glass substrate on the second planar portion of the susceptor. Claim 1 also recites a length of said sliding portion, measured from said groove, is about 10 mm.

As discussed above, the range of about 10mm is particularly advantageous because this dimension makes a transfer of the substrate more stable than the background art dimension of only 5mm (see paragraph [0041] in the originally-filed specification). Thus, with this claimed dimension, the groove is placed 10mm from the edge of the sliding portion. Therefore, the substrate can slide smoothly and stably on the sliding portion and the excess material scrapped off the sliding portion is conveniently and automatically dumped into the groove. Thus, the claimed invention produces specific advantages.

AAPA does not include any groove and specifically includes the claimed dimension of 5mm for the sliding portion. As discussed above, the background art range of 5mm for the sliding portion results in an unstable transfer of the substrate. The excess deposited material is

also built up and negatively affects removal of the substrate and subsequent depositing processes.

Further, as shown in Figure 3 of Tepman et al., the groove 38 is formed around the entire area of the substrate 14 or substrate support 16A and is not arranged or provided for receiving any scraped off material as in the presently claimed invention. That is, the deposition process in Tepman et al. is much different than the process of the present invention at least because there is no sliding substrate. Rather, in Tepman et al., the substrate 14 is raised and lowered via an elevator 18 disposed below the substrate 14. Thus, in Tepman et al., the groove 38 is arranged around the entire area of the substrate. There is no sliding of a substrate nor the claimed groove of the present invention being specifically located at a particular dimension (about 10mm) from an edge of a stepped-shaped portion of the susceptor to advantageously receive scraped off material. Similar comments apply to the grooves in DuBois et al. Further, it is respectfully submitted there is no motivation to combine the grooves in Tepman et al. and DuBois et al. with AAPA, because the deposition processes are completely different from each other. Also, the grooves in Tepman et al. and DuBois et al. are required to be completely around the substrate based on the deposition processes (i.e., the vertical lifting of the substrates) in these references.

Accordingly, it is respectfully submitted independent claim 1 and each of the claims depending therefrom are allowable.

Further, it is respectfully submitted the rejection of claims 4 and 10 under 35 U.S.C. § 103(a) noted in the Office Action has also been overcome as Rempei Nakata also does not teach or suggest the features recited in independent claim 1.

CONCLUSION

All objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance. Should there be any outstanding matters that need to be resolved, the Examiner is respectfully requested to contact David Bilodeau (Reg. No. 42,325) at 703-205-8072, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Date: January 7, 2009

Respectfully submitted,

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Attachments: AnnotatedDrawings
Substitute specification (clean copy and marked-up copy)

FIG.1
RELATED ART

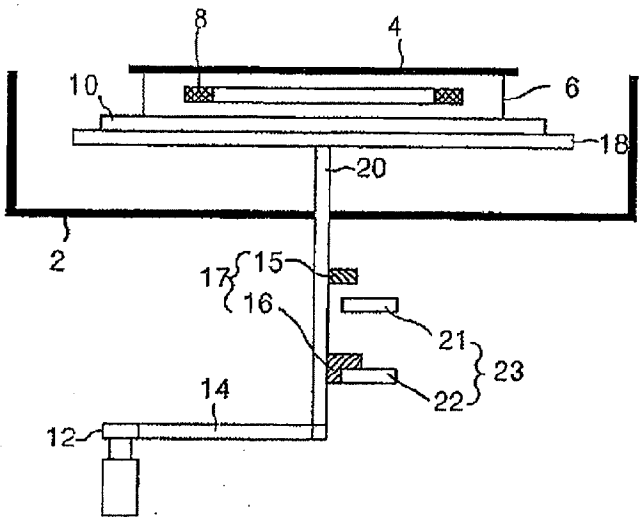


FIG.2
RELATED ART

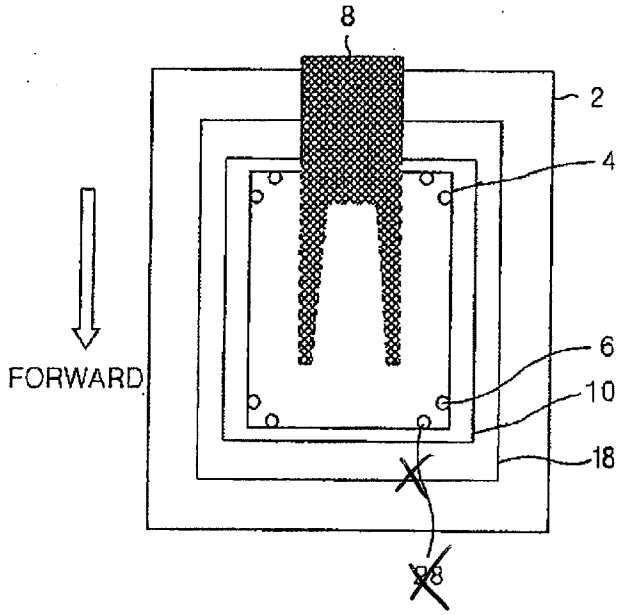


FIG.3
CONVENTIONAL ART

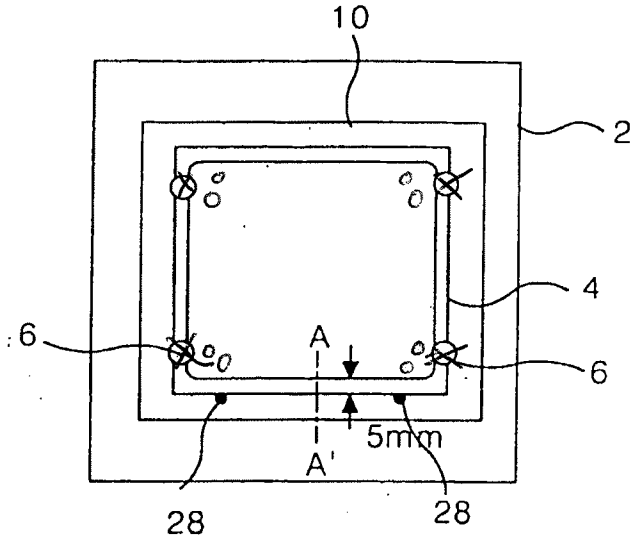


FIG.4A
CONVENTIONAL ART

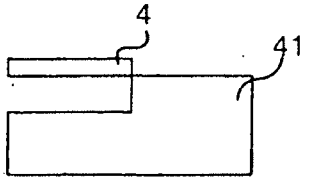


FIG.5

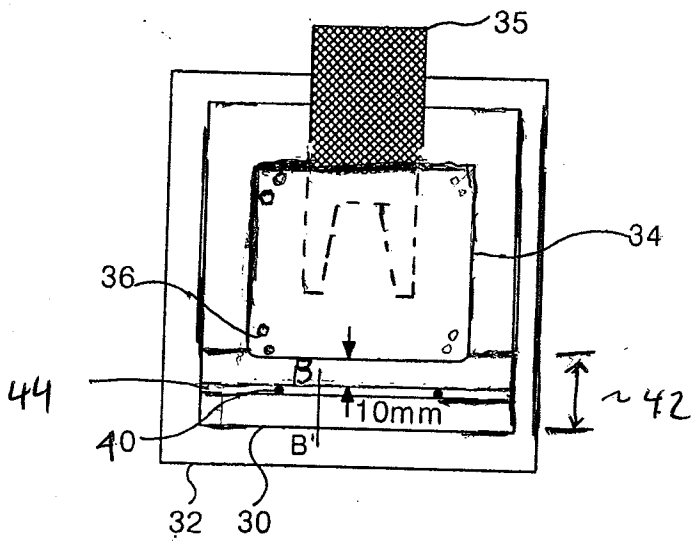
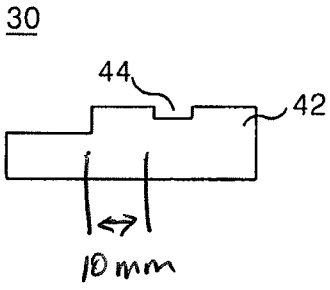


FIG.6



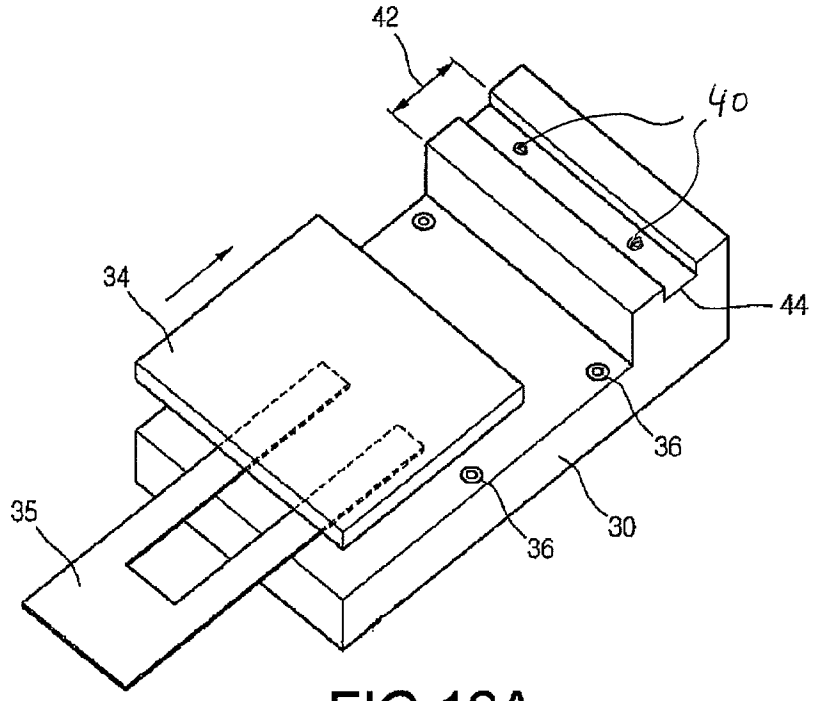


FIG.12A

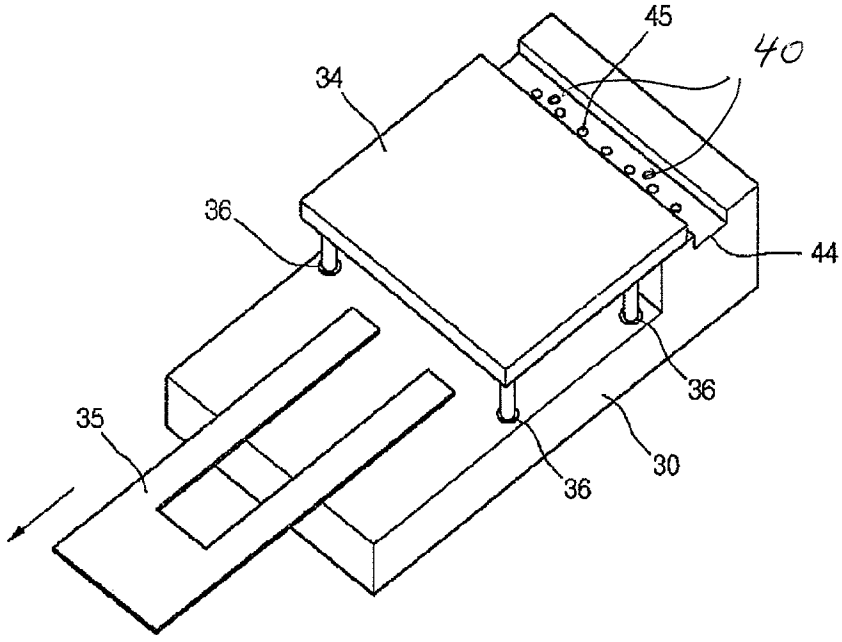


FIG.12B